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Saleh Saleh

# FEASIBILITY STUDY FOR A STARTUP COMPANY



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Any business to be established starts with an ideas. In order to make sure that these ideas are applicable in the market and enable the entrepreneur to make profits and thus give the possibility of development and continuity, studies must be conducted. Statistics, surveys and scientific basis show the right decision of implementing or cancelling the idea of that business. The totality of these actions and studies undertaken by the entrepreneur to ensure the applicability of his/her idea is called feasibility study.

This thesis defines the concept and importance of feasibility studies. The steps of preparing the feasibility studies at all stages is explained then in a simple and clear manner. In order to be easier for novice entrepreneur to choose the type of company that better suits him to start his business, the types of companies accredited here in Finland also are reviewed.

Marketing feasibility studies and their importance is introduced to accomplish the next steps of the feasibility study. The marketing feasibility study includes a study of the market, the size of the demand and the market gap for the product or service to be introduced in that market, the size of competition and the characteristics of the consumer. Moreover the marketing study also includes how to estimate the size of the demand and influencing factors on it.

After that is explained the steps of preparing the technical and engineering study which includes selecting the project site, determining its production capacity and the appropriate size, determining the method of production, raw materials and labour requirements. The total cost of the project is also estimated by determining the opportunity cost, implicit and explicit costs and production costs as well as investment costs.

In the financial feasibility study, areas of funding sources and costs are identified and an appropriate financial structure that balances the profits and risks associated with the financing structure. Cash inflows and outflows of the project and their components are also defined.

In the commercial feasibility study some basic terms are explained and shown how they are calculated, such as determination of payback period, average rate of return, profitability index, internal rate of return, sensitivity analysis and break-even point.

Since most of the projects that new entrepreneurs want to establish are small projects, so small projects are also discussed in this thesis.

When I chose the feasibility study as a subject of my thesis, I could not find in libraries here in Finland any integrated reference about preparation of feasibility studies, so my insistence was on proceeding with the preparation of this thesis to be an initial reference for all who wish to establish their own project with best wishes for success.

### KEYWORDS:

Feasibility study; Eentrepreneur; Marketing feasibility study; Technical and engineering study; Financial feasibility study; Payback period; Break-even point

Saleh Saleh

## ALOITTAVAN YRITYKSEN KANNATTAVUUSTUTKIMUS

Jokainen yritys, joka perustetaan, alkaa idealla tai joukolla ideoita. On tärkeää varmistaa, että nämä ideat ovat sovellettavissa markkinoilla, ja että yrittäjä voi ansaita voittoa ja siten saada mahdollisuuden kehitykseen ja jatkuvuuteen. Tilastojen tutkimusten ja tieteellisen pohjan avulla voidaan tehdä oikea päätös toteuttaa tai peruuttaa kyseisen yrityksen idea. Kaikkia näitä yrittäjän suorittamia toimia ja tutkimuksia ideansa sovellettavuuden varmistamiseksi kutsutaan kannattavuustutkimuksiksi.

Tässä opinnäytetyössä tarkastellaan yksityiskohtaisesti kannattavuustutkimusten käsitettä ja merkitystä, sekä sen sijaintia liiketoiminnan kehitysprosessissa. Kannattavuustutkimusten valmistelun vaiheet selitetään selkeällä tavalla. Lisäksi, jotta aloittelevilla yrittäjillä olisi helpompi valita yritystyyppi, joka sopii hänelle paremmin liiketoiminnan aloittamiseksi, tarkastellaan täällä Suomessa akkreditoituja yritystyyppisiä.

Markkinoinnin kannattavuustutkimukset ja niiden merkitys esitellään kannattavuustutkimuksen seuraavien vaiheiden suorittamiseksi. Markkinoinnin kannattavuustutkimus sisältää tutkimuksen markkinoista, markkinoille tuotavan tuotteen tai palvelun kysynnästä, markkinoiden aukosta, kilpailun koosta ja kuluttajan ominaisuuksista. Markkinointitutkimus sisältää myös, kuinka arvioida kysynnän suuruutta ja siihen vaikuttavia tekijöitä.

Tämän jälkeen työ käsittelee teknisen tutkimuksen valmisteluvaiheisiin, joihin sisältyy projektikohteen valinta, sen tuotantokapasiteetin ja -menetelmän, raaka-aineiden ja työvoiman tarve. Hankkeen kokonaiskustannukset arvioidaan myös määrittämällä vaihtoehtoiset kustannukset, implisiittiset ja eksplisiittiset kustannukset ja tuotantokustannukset sekä investointikustannukset.

Taloudellisessa toteutettavuustutkimuksessa tunnistetaan rahoituslähteiden ja kustannusten alueet ja sopiva rahoitusrakenne, joka tasapainottaa rahoitusrakenteeseen liittyvät voitot ja riskit. Myös projektin ja sen komponenttien kassavirrat ja menot määritetään.

Kaupallisessa kannattavuustutkimuksessa selitetään joitain perustermejä ja niiden laskemista, kuten takaisinmaksuajan määrittäminen, keskimääräinen tuottoaste, kannattavuusindeksi, sisäinen tuotto prosentti, herkkyysanalyysi ja nollatuloksen kohta.

Koska suurin osa uusien yrittäjien perustamista hankkeista ovat pieniä hankkeita, niin tässä tutkimuksessa käsitellään myös pieniä hankkeita.

Tämä opinnäytetyö on hyödyllinen ja alkuperäinen ohje kaikille, jotka haluavat perustaa oman projektin, jolla on parhaat menestysmahdollisuudet.

### ASIASANAT:

Kannattavuustutkimus; Yrittäjä; Markkinoinnin Kannattavuustutkimus; Tekninen tutkimus; Taloudellinen Kannattavuustutkimus; Takaisinmaksuaika; Nollatuloksen kohta.

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# 1 INTRODUCTION

Human thought is moving towards creativity and business. Many people, after completing certain studies and acquiring the many skills, want to start their own independent project. This in my opinion is more beneficial to the individual and the community. On the personal level will be the permanent desire to develop the work and achieve success and thus increase opportunities for creativity. Free work, in contrast to normal work, in addition to providing more money for the person, it constantly develops personal and creative skills and the opportunity to implement a new idea will be always available. As for the public benefits, in addition to achieving a financial return to the state and increasing employment opportunities will increase the opportunities for creativity, production and competition among entrepreneurs and thus achieve the growth and progress of the state and increase the welfare of the community.

Here in Finland we see that most migrants have difficulties finding suitable for them jobs, so many of them resort to their own independent work.

Any investment project starts with an idea. This idea can be generated by a person because of certain circumstances or need. The idea of creating a new job can come from a variety of sources, it may come of someone's mind who looking for a job and not wanting to be an employee, it may come from an administration of existing company or a group of producers to create a new product.

Regardless of the source and origin of the idea, it is necessary to conduct certain research and scientific steps to ensure the success of the project and the achievement of profits, this means to prepare feasibility study for the project of which we have the idea of founding.

Although the preparation of the economic feasibility study cost money and time, but not doing it and making a wrong investment decision may lead to waste of resources and the loss of funds far exceeds the money to be spent on the feasibility study.

In this thesis will be demonstrated the basic principles of how to prepare the feasibility study for a project from its inception as an idea and until it comes into force. It will include some basic concepts and types of projects and then the steps of preparation the feasibility study.

This thesis can be useful to the novice investor in explaining what to do and what to avoid making the right decision and launch the project.



## **2 BASIC CONCEPTS RELATED TO FEASIBILITY STUDIES**

### **2.1 Concept of feasibility study**

All studies related to the investment opportunity in various stages since the idea until reaching the final decision to accept the idea as economically justified or to reject this idea because it is not economically justified. It is an analysis of the viability of an idea. The feasibility study focuses on helping answer the essential question of “should we proceed with the proposed project idea?”. A feasible business venture is one where the business will generate adequate cash-flow and profits, withstand the risks it will face, remain viable in the long-term and meet the goals of the founders. The preparation of feasibility studies in a sound scientific manner leads to the provision of resources since the implementation of a project without the preparation of sufficient study could lead to the failure of the project.

A feasibility study is only one step in the business development process, there are five steps to that as shown in Figure 1. (Don Hofstrand, 2009)

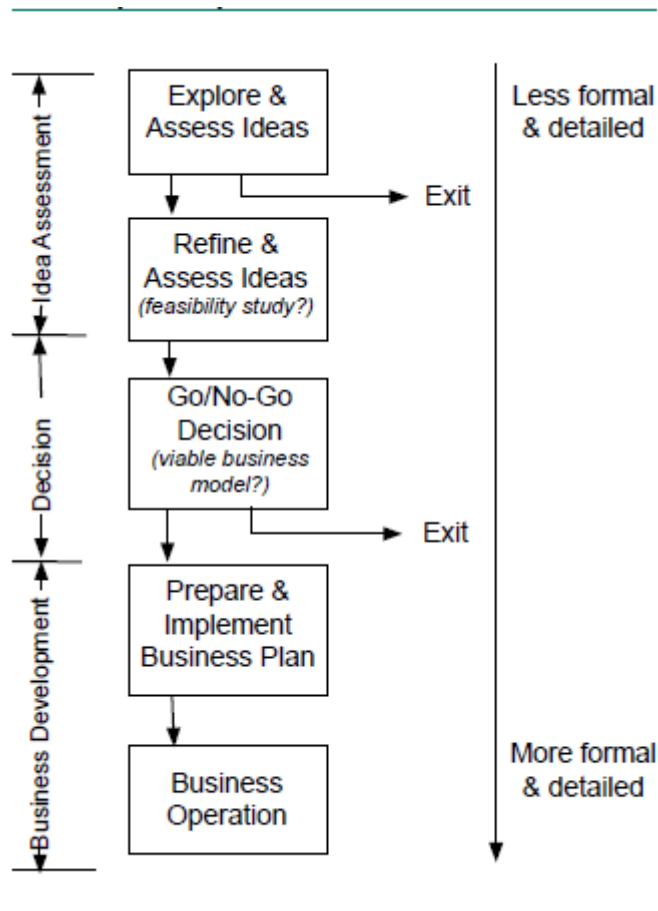


Figure 1. Business development process. (Don Hofstrand, 2009)

## 2.2 Conducting feasibility studies

The decision to conduct a feasibility study should not be taken lightly. It is an expensive and time-consuming process. However, not doing a feasibility study can be even more expensive in terms of the poor decisions you may make from not conducting the proper analysis.

Before starting a comprehensive study, investors must have some initial and promising information to complete the idea successfully. This is the so-called "**pre-feasibility**" (Dr. Khalil Atieh, 2008) which can be done through the circle of friends or colleagues or even by asking advisers or specialists. At this initial stage, a marketing study can also be carried out to ensure that there is a marketing potential for the product or service to be provided. If this possibility is not available, it is provided comprehensive study costs, if it is available the investor can continue preparing the feasibility study.

The feasibility study is prepared by a specialized team that includes the accounting, administrative, technical, engineering and other fields related to the investment activity, and the more the team is experienced and has the accurate information and data, the more likely the success of the study. But the presence of this team of specialists does not exempt the project owner or shareholders from pursuing the study process.

### 2.3 Specifications of feasibility study

Before accepting the feasibility study, make sure that it meets the following requirements (Dr. Khalil Atieh, 2008):

- Be clear, easy to read and understandable.
- It should Identify and discuss all assumptions related to project development.
- It should verify project management expectations.
- Check consistency within each section as consistency is achieved between sections.
- Be compatible with scientific and logical research rules
- Contains all required information and meets the conditions of the contract signed with the project management.

### 2.4 The difference between the feasibility study and the business plan

The feasibility study is a study of an investment idea to decide whether to implement or to cancel it, but the business plan is a roadmap of project implementation, so the business plan is differentiated to feasibility study as follows:

- A business plan is prepared after a feasibility study has been conducted.
- A feasibility study is filled with calculations, analysis and estimated projections of a business opportunity. While a business plan is made up of tactics and strategies to start and grow the business.
- A feasibility study is all about business idea viability while a business plan deals with business growth plan and sustainability.
- A feasibility study report shows the profit potential of a business idea or opportunity to the entrepreneur, while a business plan helps the entrepreneur raise the needed start-up capital. (Don Hofstrand and Mary Hoz-Clause. What is a feasibility study? 2009)

## 2.5 Feasibility study phases

The elements to include in a feasibility study vary according to the type of business venture analysed and the kind of market opportunities identified. But the steps listed below are the outlines of any feasibility study process:

- Market Feasibility
- Technical Feasibility
- Financial/Economic Feasibility
- Organizational/Managerial Feasibility
- Study conclusion

Each stage of the feasibility study will be discussed in detail later.

### 3 COMPANIES FORMS

Before starting any project, it is necessary to know the legal form of the company to be established. I will review the forms and characteristics of the companies accredited in Finland:

**Proprietorship (toiminimi):** The simplest and most popular way to start in business is to operate as a private entrepreneur using a company name. Decision-making and responsibility in the company belong with the entrepreneur. Starting business in this way is speedy and uncomplicated.

**Limited Company (osakeyhtiö):** Establishment of a limited company requires at least one individual or corporation. The share capital is divided into shares. A shareholder's voting power, profit and liability depend on how many shares they own.

**Partnership (avoin yhtiö):** A partnership is formed when two or more individuals agree to it by signing a partnership agreement. The partners have equal status in all the company's operations and are personally responsible for company decisions, liabilities and debts.

**Limited partnership (kommandiittiyhtiö):** A limited partnership differs from an ordinary partnership in that in addition to one or more accountable partners there is at least one sleeping partner, i.e. a participant in the company who generally acts as an investor.

**Cooperative association (osuuskunta):** Cooperative association is a company owned by its members. There can be one or several members. Each member has one vote in cooperative association meetings. The liability of the members for the cooperative association's obligations (for example, debts) is limited to their investment of share capital.

(Info Finland / Living in Finland, Company forms, 2019.)

## 4 MARKETING FEASIBILITY STUDY

The marketing feasibility study is an important step to complete the next steps. The error occurs in which it moves to the next stages.

This study aims to ensure that there is enough demand for the product to be submitted to the market.

It is necessary to identify the market in which the product will be sold and is it a market controlled by competition? Or is the producer monopolizing to produce this product or service? Is the product produced for the first time and has no competitor or is it like products already in the market? Does the product have a foreign competitor?

It is also necessary to identify the consumer of this commodity and the type or segment of income that belongs to it or purchasing power.

After identifying the customers and their characteristics, the demand for the product to be submitted to the market can be estimated.

The marketing study is the basis for the technical study (capacity of the project) and the associated cost estimate. So, the technical feasibility study can only be carried out after making sure the existence of a market or demand for the product or service.

The first step in the marketing feasibility study is to study the factors affecting supply and demand. These factors vary from one domain to another and from one product or service to another, but there are always common factors.

### 4.1 Factors influencing demand

- **Population Variable:** The population and population growth rate are important factors. The increase in population leads to increased demand and the size of the market. The shortage of population leads to a shortage of demand and shrinking market size. The age structure of the population also plays a major role in determining the demand. If young people predominate over the age structure, this means that the production of goods

suitable for young people can become profitable, unlike in the case of the coup of the population pyramid where it becomes promising profit activities suitable for adults. The increasing birth rate is also increasing the demand for certain goods. The distribution of the population between rural and urban areas also affects demand and the same applies when considering the population based on sex.

- **Rates of marriage:** The increase in marriage rates leads to increased demand. It is noted that this factor influences certain products during the preparation period for marriage, thus creating promising investment opportunities.
- **Life style philosophy:** Consumption is influenced by the behaviour of individuals and their philosophy in life, such as the tendency of individuals in a certain society to reduce consumption in favour of savings and in another society, the individual goes to the urgent pleasures and buy what he wants. The individual's sense of economic security in a certain country can facilitate his borrowing or purchase by instalments also affects the consumption style.
- **National income and its distribution pattern:** Income is linked to consumption under a positive relationship, and equity in income distribution leads to increased consumption.
- **Prices of alternative goods:** The existence of a competitive alternative to the commodity to be produced affects the demand for it, unlike whether the product is new and not competing with other products, which necessitates the study of alternatives, their prices and their impact on demand and on the product to be produced.

- **Product or service price:** The price of the commodity is one of the most important factors affecting the demand. In general, there is an inverse relationship between the demand for a commodity and its price except in special cases called exceptional demand cases.
- **Market Structure:** The demand for the product to be produced depends on the structure of the market and whether it is a fully competitive (price taker) or monopolistic market (price maker).
- **Renewal and Fashion:** The emergence of new goods in the market is causing dissatisfaction with old goods and the desire of consumers to acquire the new goods, thereby increasing demand for these goods. The change in fashion and the constant pursuit of high-income people and women to follow up also affect the demand, it is increasing for new goods and decreasing on other items that are no longer fashionable.
- **View of the future:** If an individual is optimistic about the future, this may be a factor in increasing consumption. In the case of human anxiety about the future and a sense of economic insecurity, this may be a factor of under-spending. Hence, a market study must take into account the public's view of the future.



## 4.2 Data needed to prepare the marketing study

The data and information required are determined in according to the objective of the marketing study, in addition to the cost of data acquisition and the time spent in compiling it. In general, two sources of data are primary sources and secondary sources.

### 4.2.1 Secondary data

Consists of **internal** data available in project records such as financial statements, data on customers and consumers, salaries and expenses of salesmen, their number and average working time, sales value and other data. And **external** data which have been compiled, recorded and published by one of the institutions, researchers or government agencies; such as:

- Population, income and national GDP data.
- Data on birth and marriage rates.
- Data on wholesale and retail prices, foreign trade statistics and agricultural and industrial production statistics.
- Consumption and employment statistics.

### 4.2.2 Initial data

In case of inadequate secondary data, the researcher will collect the required data through two methods: **survey**- It is a set of questions directed to the intruder, to obtain certain information; and **observation** - The market researcher observes the current events and record them within a certain period of time, such as the number of visitors to a specific hotel or cafe, the number of buyers for a particular product and the quantity of the purchase.

### 4.3 Demand estimation

Estimating the demand, estimating its size, specifications and identifying the factors influencing it is one of the most important objectives of studies and measuring the market. The importance of estimating demand comes from the fact that it is the basis for many decisions such as the size of production capacity, labour volume, inventory and other decisions that affect future work in the project. There are two ways to estimate demand:

#### 4.3.1 Simple methods

Simple methods and models based on the personal experience and appreciation of the researcher, preferably in the case of a new product, in the absence of data that can be used for forecasting, in the case of economic and social instability in the community, and in the occurrence of rapid technological development.

#### 4.3.2 Quantitative methods

Quantitative methods which divided into **economic methods** depends on economic factors and variables that affect sales such as prices, disposable income, and population, and **statistical methods**.

To estimate the available marketing opportunity, data on the current and future supply of the product or service to be put in the market must be available. Data on the production capacities of the current and potential producers of the product are also required. In estimating the marketing gap, two situations should be distinguished:

- In the case of producing a new product that is not in the market:

**Estimated demand = expected production volume = marketing gap**

- In the case of an existing product in the market, the expected production is based on defining the marketing gap according to the following equation:

**Marketing Gap = Total expected demand - Total expected supply**

When **total expected supply = total current production + imports + expansion capacity of existing projects + expected production of projects under development + expected production of projects planned.**

Equation 1. Marketing gap. (Dr. Khalil Atieh, 2008)

A study of the marketing gap shows either a surplus supply or a surplus demand and therefore an opportunity to be exploited for a new project.

After that, a report should be prepared explaining the results of the marketing study and includes suggestions on offering the product or service to the market and about preparing the technical study.

## 5 TECHNICAL AND ENGINEERING STUDY

This phase is also called the study of alternatives. The study content is a choice among the alternatives at each stage according to the project's possibilities and objectives. The selection is between the proposed sites for the project, between the different production methods, between different offers of equipment from different markets and different types of production technology used.

### 5.1 Technical study steps

#### 5.1.1 Selection of the project site

First, the geographical area on which the project will be built should be determined, and then determine exactly where the project will be in that area. The importance of site study varies from one project to another depending on the nature of the project.

#### 5.1.2 Determine the production capacity and the appropriate size of the project

An important element in the technical and engineering feasibility studies is to determine the production capacity to meet the estimated demand in the marketing feasibility study. There are several methods used to determine the volume of production at which the project can operate without loss, one of the most known of these methods is **Break Even Analysis**.

After determining the Break-Even Analysis, we compare it with the volume of production required to meet the demand according to the market study. If the estimated demand in the marketing study is less than the Break-Even Analysis, the project is rejected. If the opposite occurs, the volume of demand according to the marketing study is greater than the Break-Even Analysis, the project is justified.

### 5.1.3 Determine the production method

There are often many ways to produce any product. There are methods that rely heavily on the human element - Intensive Labour. There are also an Intensive Capital method and Intensive Knowledge method. The method of production is determined in the light of local data from resources and possibilities, and in view of the nature of the product.

### 5.1.4 Estimation of raw material and labour requirements

The project usually needs two types of employment: the temporary labour which needed at the stage of establishment, such as installation engineers or study experts. Permanent employment required by the project on a permanent basis. The number of employees varies from one project to another depending on the nature of the project and the type of commodity. It also depends on the size of the project, production capacity, the type of equipment and raw materials used in production.

## 5.2 Total project cost estimates

### 5.2.1 Opportunity cost:

The concept of opportunity cost (or alternative cost) expresses the basic relationship between scarcity and choice. Opportunity cost is the anticipated value of 'that which might be' if choice were made differently. The New Oxford American Dictionary defines it as "the loss of potential gain from other alternatives when one alternative is chosen." Opportunity cost of a product or service means the revenue that could be earned by its alternative use. For example:

- The opportunity cost of using a machine to produce one product is the earnings that would be possible from other products.
- The opportunity cost of the time one puts into his own business is the salary he could earn in other occupations

### 5.2.2 Implicit Costs & Explicit Costs

**Explicit cost** is the amount paid by the project for the production factors services used in the production process. The **implicit cost** is the cost of the production factors owned by project's owners.

### 5.2.3 Production costs

Fixed Costs and variable costs, Fixed Costs: Costs that do not change according to the number of units produced. It represents the expenditure incurred by the project, whatever the size of the output, even if it is zero. For example, salaries of managers and permanent staff, interest on fixed capital used, rental of premises, premiums and the like. **Variable Costs:** The cost of variable production factors used at a given volume of production. These costs are increasing as the volume of production increases and decreasing when decreases. For example, the price of raw materials, transport, energy and other expenses.

### 5.2.4 Estimating the investment costs required for the project

All amounts spent on the project since the beginning of thinking, and during the stages of study and construction, processing, testing and operation, until the end of the first operation cycle. Investment costs can be divided into three groups: **Capital costs** (land, buildings, machinery and equipment, transport, furniture and office equipment, tools... etc); **Deferred income expenses** (foundation expenses, costs of designs, conducting feasibility studies, testing, labour training, administrative and financing expenses during the establishing period, advertising and others); **Working capital** (Raw materials, production supplies and employees' wages and expenses are sufficient to run the project during a full operation cycle); and **Emergency reserve**.

### 5.3 Preparing a report on the technical and engineering study results

The report includes the outcome of the study, which shows all the assets necessary for the establishment and operation of the project and its investment costs. The report concludes by recommending the continuation of the financing feasibility study.

## 6 FINANCIAL FEASIBILITY STUDY

The financial study helps investors identify all the financial requirements for setting up and operating the project and identifying the best sources of funding needed to achieve it. It also helps to prepare estimates of cash inflows and outflows that enable the determination of the commercial profitability of the project, considering which the project is accepted or rejected.

### 6.1 Areas of financial feasibility study

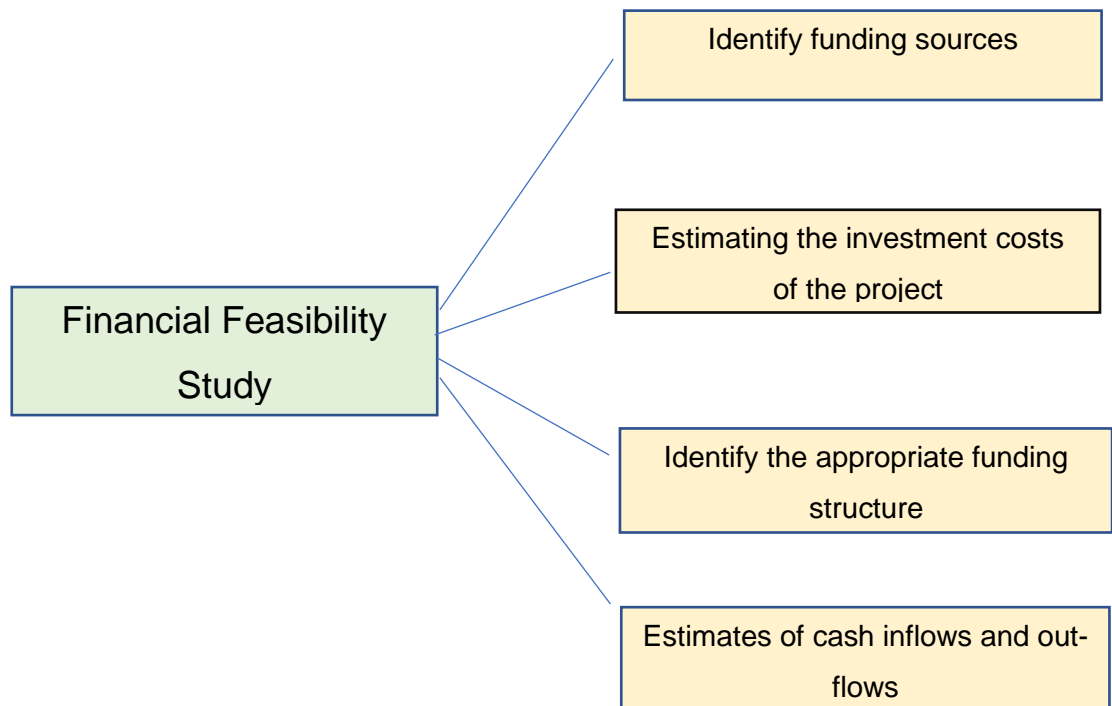


Figure 2 Areas of financial feasibility studies

#### 6.1.1 Sources of funding:

- **Capital:** Amounts and in-kind contributions provided by project owners



- **Retained earnings:** Undistributed profits.
- **Reserves:** Part of the profits have been saved over the past years to support the financial position of the project and to face risks.
- **Loans of partners:** Project owners provide loans to the project and are phased out from project revenues.
- **Long-term loans:** The loans obtained by the project from banks and insurance companies and is obliged to refund them in more than a year.
- **Short-term loans:** Loans not exceeding one year.

#### 6.1.2 Costs of funding sources:

For each source of funding there is a certain cost to be borne by the project. This cost represents the minimum expected return on the funds invested in the project, which should not be less than the cost of the invested funds, otherwise the project is rejected.

#### 6.1.3 The appropriate financing structure:

It is up to the project management to choose the appropriate funding structure as this will affect the level of return achieved and the risks that the project can face in the future. The finance structure that balances the profits and risks associated with the financing structure should be selected.

#### 6.1.4 Estimation of cash inflows and outflows of the project:

Cash flows represent an estimate of expected future cash receipts and payments that will be incurred in project implementation. Cash flows are cash inflows into the project and cash payments are outflows. The estimation of cash flows is the first step in achieving the final objective of conducting a detailed feasibility study, which is to assess the feasibility of the investment opportunity from the perspective of the investor.

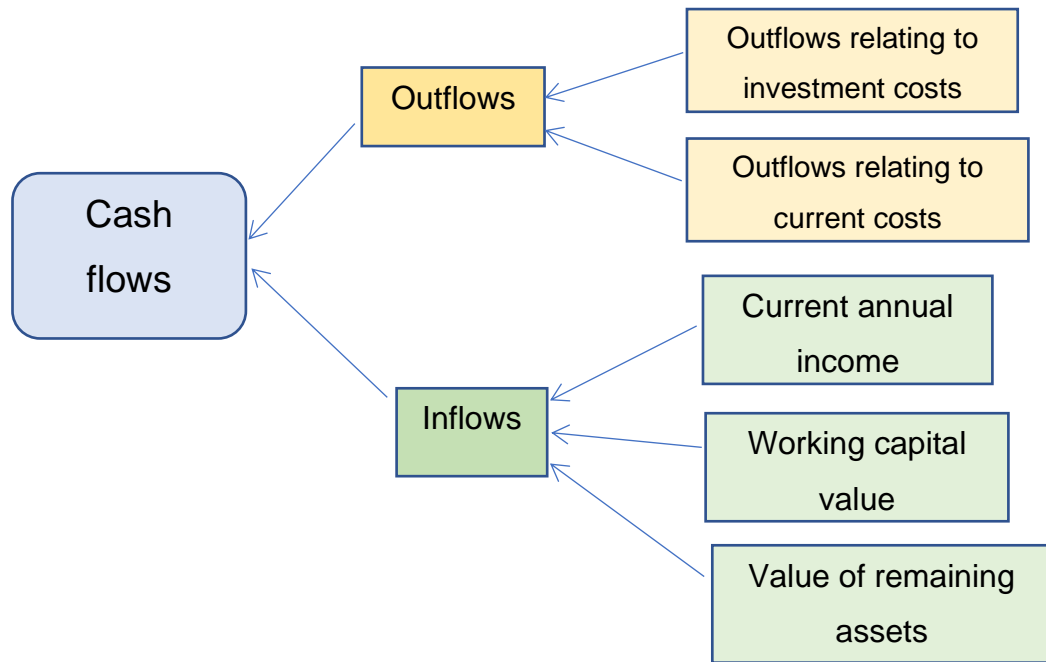


Figure 3 Components of cash flows

## 7 COMMERCIAL FEASIBILITY STUDY

Here we review the different ways in which an investor can rely on them to accept or reject an investment opportunity.

### 7.1 Payback period

According to this way, different investment opportunities are differentiated by the length of time that funds or investment costs are recovered for all available investment opportunities. And prefer investment opportunities where recovery is faster.

#### **Payback Period calculation:**

$$\text{payback period} = \frac{\text{Investment expenditure}}{\text{Net annual cash flow}}$$

Investment expenditure = Cost of fixed assets + increase in working capital

Equation 2. Payback period. (Dr. Khalil Atieh, 2008)

But where annual cash flows are not equal, annual net cash flows are collected year after year until the total of these flows equals investment expenses. For example, to calculate the recovery period for a project with an investment cost of 70,000 euros and net cash flows are as follows:

Table 1. Net cash flows year by year

Year	Net cash inflows per year
1	15000
2	18000
3	17000
4	20000
5	16000

We prepare the following table:

Table 2. The recovery period.

Year	Net annual cash flows	Net consolidated cash flows
1	15000	15000
2	18000	33000
3	17000	50000
4	20000	70000
5	16000	86000

The recovery period is 4 years, it is the period during which the project costs of investment and the net consolidated cash flows are realized at € 70,000.

## 7.2 Average rate of return

Average annual net accounting profit (after tax)

$$\text{Average Rate of Return} = \frac{\text{Average annual net accounting profit (after tax)}}{\text{Average investment cost}}$$

Total expected net profit of the project's life

$$\text{Average annual net accounting profit} = \frac{\text{Total expected net profit of the project's life}}{\text{Expected economic life of the project}}$$

$$\text{Average investment cost} = \frac{\text{investment cost}}{2}$$

Equation 3. Average rate of return. (Dr. Khalil Atieh, 2008)

### 7.3 Profitability Index:

$$\text{Profitability Index} = \frac{\text{Current value of expected net proceeds (cash inflows)}}{\text{Current value of investment expenditure (cash outflows)}}$$

Equation 4. profitability index. (Dr. Khalil Atieh, 2008).

- If the value of the profitability index  $> 1$ , this means that the project has a positive current net value and here the project is accepted because it generates more than the cost.
- If the value of the profitability index  $< 1$ , the project is not accepted because its returns do not cover its investment costs.
- If the value of the profitability index  $= 1$ , the decision oscillates between rejection and approval because the project returns cover only its investment costs.

### 7.4 Internal Rate of Return (IRR):

The internal rate of return is the rate that equates the present value of the expected net return series (cash inflows) with the present value of investment expenditure (outflows).

- If the IRR is greater than the cost of getting the money, the project is commercially acceptable.

- If the IRR is lower than the cost of obtaining the funds here, the project is not commercially acceptable and should be rejected.

### 7.5 Sensitivity Analysis:

Sensitivity analysis is one of the means of ensuring the feasibility of the project to be carried out. This means that the project will be exposed to a set of environmental, legal, economic, marketing and commercial effects in various forms and to measure the impact of these factors on the good performance of the project and its ability to achieve an appropriate return.

### 7.6 Break Even Analysis:

A break-even point is the amount of sales where total revenue equals total costs, or when the profits are equal to zero.

Define the break-even point using cost functions and total revenue functions

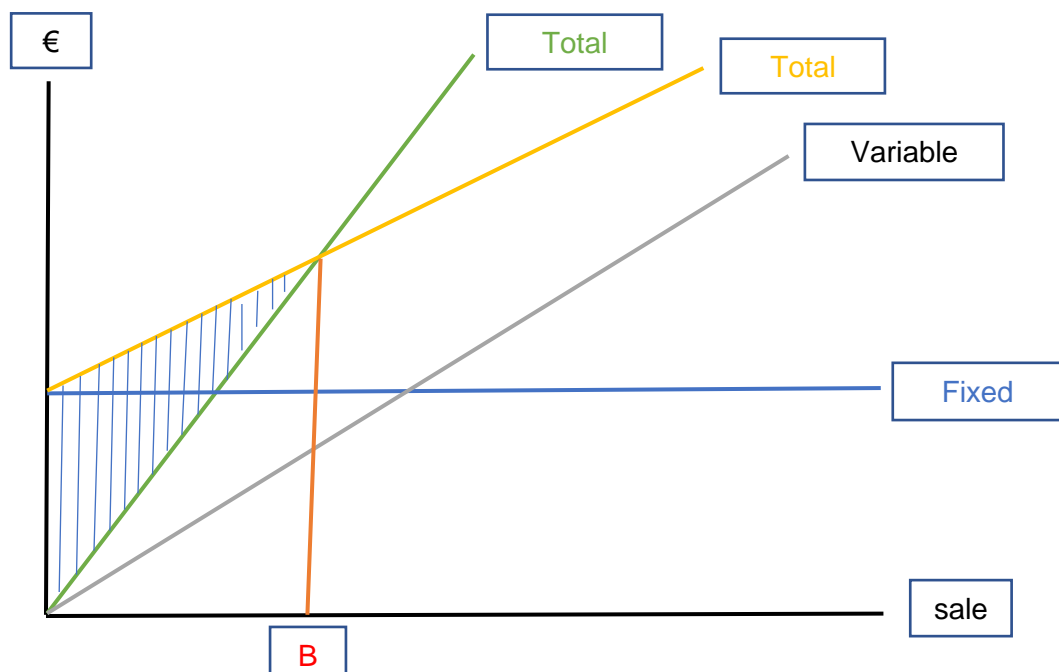


Figure 4. Break-even point. (Dr. Khalil Atieh, 2008)

The previous figure shows that the volume of the tie trade is at point BE. Sales after point BE will earn profits, but before it there are losses. The project will make profits as sales increase.

- If the sales volume according to the marketing feasibility study is less than the size of the breakeven, the project will be economically rejected.
- If the expected demand volume according to the marketing feasibility study are greater than the size of the breakeven, the project will be accepted.

## 8 ABOUT SMALL PROJECTS

Since most entrepreneurs want to start small businesses, I found it useful to point out some issues related to these projects, such as the different motives for creating a small project, their relation to the success or failure of the project later, and the most important obstacles to the small project and others.

### 8.1 Motivations to create a small project:

There are positive and negative factors motivate to decide to create a small project.

Table 3. Positive and Negative factors of small projects. (Dr. Khilil Atieh, 2008).

Positive factors	Negative factors
<ul style="list-style-type: none"> <li>-Availability of capital.</li> <li>-Having a project idea.</li> <li>-The desire for independence.</li> <li>-The desire to achieve high returns.</li> <li>-Love adventure.</li> <li>-Encouragement of relatives and friends.</li> <li>-Encouragement of organizations.</li> <li>-Self-realization.</li> </ul>	<ul style="list-style-type: none"> <li>- Poor working conditions as an employee.</li> <li>- Suffering from unemployment.</li> <li>- Not wanting to work as an employee.</li> <li>- Poor surrounding circumstances.</li> </ul>

### 8.2 Obstacles of establishment a small project:

- Before starting the project, a fixed income should be available to meet the monthly fixed requirements.
- For the success of the small project, specific work dates must be adhered to.



- Fear of external environment factors and their multiple variables and the challenges they pose to the project.
- Difficult to leave the attractive Insurance systems and pensions in the organization in which the individual works.
- For the success of the project, the entrepreneur must have good health and the ability to withstand pressure and work for long time.
- For success of the project, enough capabilities, skills and experience commensurate with the scope of the project, must be available.
- The need for family support and understanding the conditions and pressures of work, especially in project's early stages.
- The project owner must have some public relations to assist in the initial stages of the project.
- It is necessary to ascertain the need of the actual market for the product to be presented, taking into account the positions of competitors, and to find the appropriate strategy to attract customers compared to other competitors.
- A balance must be made between delivering a good product to customers and making a reasonable profit.

### 8.3 The idea of the small project:

The idea of a small project is the key to success. The activity to be carried out should be appropriate to the nature, personality, skills and experience of the project owner, and must be in line with the actual needs of the surrounding market and the tastes of prospective customers.

Table 4. The most important stages of the feasibility study for a small project. (Dr. Khalil Atieh, 2008).

<b>Marketing study</b>	<b>Technical study</b>	<b>Financial study</b>	<b>Organizational and legal study</b>
<ul style="list-style-type: none"> <li>- Studying the demand</li> <li>- wishes</li> <li>- Capabilities</li> <li>- Properties</li> <li>- Estimate expected sales</li> </ul>	<ul style="list-style-type: none"> <li>- Estimation of production volume.</li> <li>- Determine the size of the project.</li> <li>- The place of the project and its interior design.</li> <li>- machinery and equipment, materials and labour.</li> </ul>	<ul style="list-style-type: none"> <li>- Analysis of capital costs and operating costs.</li> <li>- Preparation of project financing structure (invested capital / loans).</li> <li>- Calculated profits.</li> </ul>	<ul style="list-style-type: none"> <li>- Preparing the organizational structure of the project.</li> <li>- Estimation of employment needs.</li> </ul>

#### 8.4 Studying the idea:

The small investor is interested in the feasibility study so that he can rest assured that the spending of his limited investments will achieve the return that achieves his ambitions. In addition, the preparation of this study may be one of the main requirements for obtaining assistance (loans or technical and marketing expertise) from the supporting bodies for small projects.

The feasibility study of the idea of the small project requires studying the surrounding external environment in all its economic, social and competitive dimensions and obtaining the largest possible amount of information about this environment to determine the feasibility of the project more accurately and realistically.

## 9 CONCLUSIONS

The goal of this thesis is to help all those who wish to establish their own business to ensure the feasibility of their project and the possibility of reaching the desired objectives before starting it.

The establishment of any project or business without conducting a feasibility study based on scientific bases and real surveys taken from community segments concerned with the activity of the project, and without an in-depth study of the market which the product or service to be presented, may lead to serious losses in money in addition to waste owner's time and effort.

Although the preparation of the feasibility study requires financial expenditure, but the amount might be spending on the study is not comparable with the large amounts that the entrepreneur may lose in case of not conducting the study.

In this thesis, the feasibility study, prefeasibility study, the importance of each of them and its location in the process of business development were defined. It was also reviewed the steps of preparing the marketing study, technical and engineering study, financial study and commercial study, each of them was explained clearly and simply so that any user can understand and apply easily.

It has been also touched on the types of companies and the characteristics of each of them in order to make it easier for the entrepreneur to choose the type of company that suits him to start his project.

Since most of the projects undertaken by business start-ups are small projects, a chapter of the thesis was devoted to explaining its motivations and constraints and how to study the idea of establishing small enterprises.

Some important terms for the preparation of the feasibility study have been reviewed and explained and the way of their calculation such as market gap, the cost of project funding sources, cash flows, payback period, average rate of return, profitability index, internal return rate, sensitivity analysis and break-even point.

This thesis, in its simplified and clear context, can be a primary reference for all who wish to establish their own business.

In preparing the feasibility study by the owner or by specialists in this field, despite its financial cost, the entrepreneur gets benefits in the following two cases:

- If the results of the study show that the business is feasible, the likelihood of success of the project and achieving the desired objectives is much greater.
- If the results of the study show that the business is not feasible, the project will be cancelled and think about another, thus saving a lot of money, effort and time.

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